

**Rapid Communication****Current distribution of non-native bumblebees (Hymenoptera, Apidae) on the Faroe Islands including the first records of three recent arrivals**Shannon Goldberg<sup>1</sup>, Rinke Vinkenoog<sup>1</sup>, Matthew J. Pound<sup>1</sup> and Jens-Kjeld Jensen<sup>2</sup><sup>1</sup>*School of Geography and Natural Sciences, Northumbria University, Newcastle upon Tyne, UK*<sup>2</sup>*Í Geilini 37, FO-270 Nólsoy, Faroe Islands*Corresponding author: Shannon Goldberg ([shannon2.goldberg@northumbria.ac.uk](mailto:shannon2.goldberg@northumbria.ac.uk))

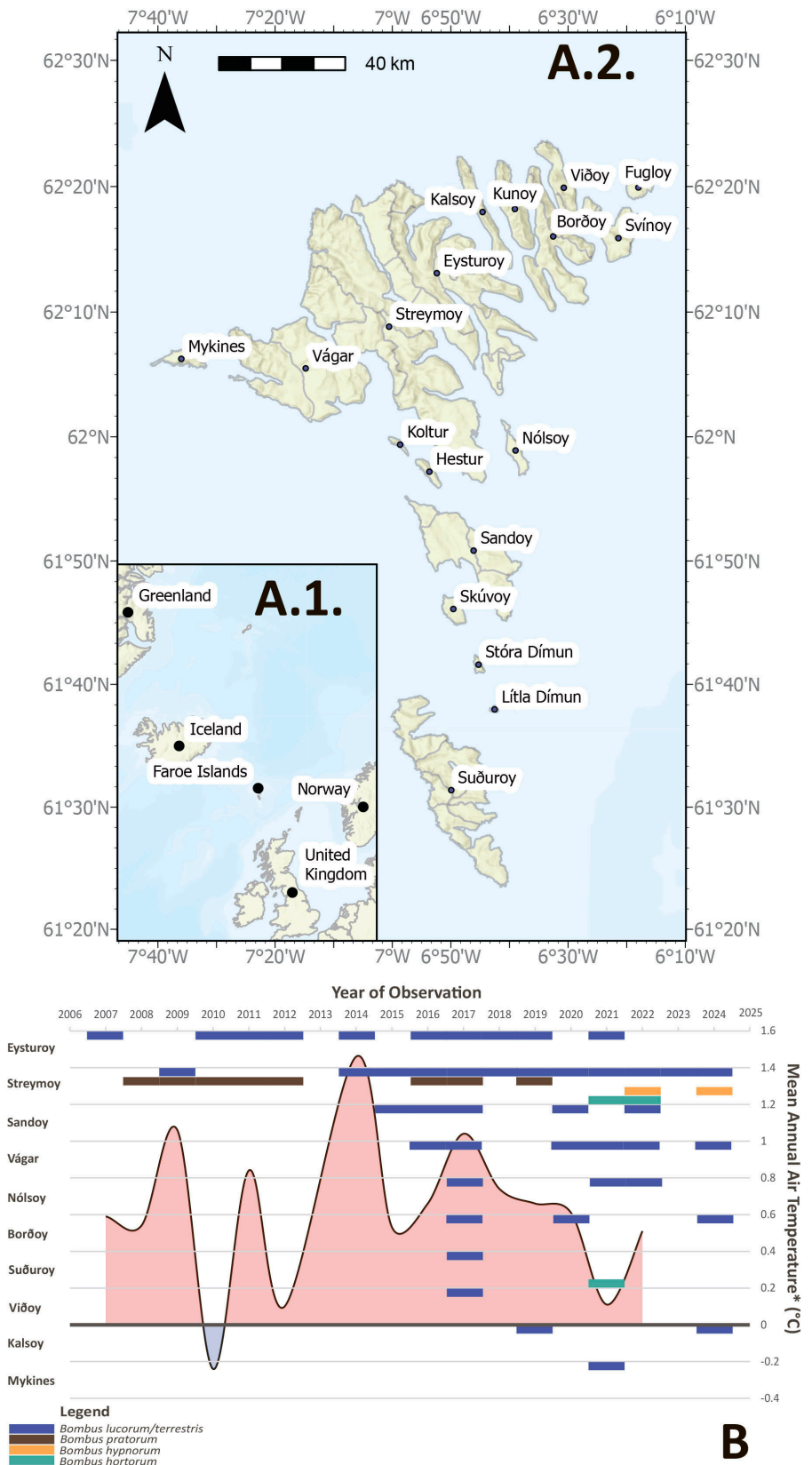
**Citation:** Goldberg S, Vinkenoog R, Pound MJ, Jensen J-K (2025) Current distribution of non-native bumblebees (Hymenoptera, Apidae) on the Faroe Islands including the first records of three recent arrivals. *BioInvasions Records* 14(4): 845–855, <https://doi.org/10.3391/bir.2025.14.4.08>

**Received:** 11 February 2025**Accepted:** 14 July 2025**Published:** 26 September 2025**Handling editor:** António Onofre Soares**Copyright:** © Goldberg et al.This is an open access article distributed under terms of the Creative Commons Attribution License ([Attribution 4.0 International - CC BY 4.0](https://creativecommons.org/licenses/by/4.0/)).**OPEN ACCESS****Abstract**

Three new non-native bumblebee species, *Bombus hortorum*, *Bombus hypnorum* and *Bombus terrestris*, have been recorded on the Faroe Islands for the first time. Previous literature reported only the presence of *Bombus lapponicus*, *Bombus lucorum* and *Bombus pratorum*. A combination of records from 2007 to 2024 have been utilised to explore and update the distributions of each species of bumblebee now present. Whilst *B. lucorum* has continuously spread through most of the islands, *B. pratorum*, *B. hortorum* and *B. hypnorum* have remained localised with limited range increase. The confirmation of an individual *B. terrestris* is discussed with respect to misidentifications. *B. lapponicus* is considered no longer present on the islands. These updated distributions provide initial data to understand the ongoing colonisation of these bumblebee species, the potential for further establishments or range expansions, and will help to determine their invasive potential in the future.

**Key words:** *Bombus* sp., introduction, North Atlantic, new records, invasive potential**Introduction**

The rate of species introductions to new geographical regions has been rapid in recent years (Seebens et al. 2020). Within the North Atlantic realm (Figure 1), bumblebees (*Bombus* spp.) have been introduced to a number of islands (Kratowchwil 2016; Namin et al. 2021; Goulson et al. 2011; Goulson and Williams 2001). In Iceland, introductions of *Bombus lucorum* (Linnaeus, 1761) and *Bombus hortorum* (Linnaeus, 1761) were suggested to be a result of individual queens hibernating in imported potted plants (Prýs-Jones et al. 2016). The first records of both species were within reasonable flying distance of Reykjavík's port. Similarly, the first records of *Bombus hypnorum* (Linnaeus, 1758) were observed near the port at Keflavík (Prýs-Jones et al. 2016). Potapov et al. (2018) showed that the Icelandic bumblebee fauna shared mitochondrial DNA lineages with those of the United Kingdom, which seems a likely origin point. Whilst it is possible for bumblebees to navigate large bodies of water (Fijen 2020), their arrival is almost certainly an unintended outcome of human-mediated maritime transport (Prýs-Jones et al. 2016).



**Figure 1.** Bumblebee observations in the Faroe Islands. A.1. Map showing the location of the Faroe Islands with respect to North Atlantic countries with bumblebee introductions. A.2. Individual island names of the Faroe Islands. B. The year each species was observed on which island. \*Mean annual air temperature was calculated as a difference to the average temperature between 1953 and 1973. Temperature increase from this average is depicted in red and decrease depicted in blue. Climate data was obtained from Jensen (2023).

These introductions have not been benign. Since the arrival of *B. lucorum* in Iceland in 1979, this species has steadily increased its range and displaced *Bombus jonellus* (Kirby, 1802) in multiple localities (Hallmen 2017). Both *B. jonellus* and *B. lucorum* compete for the same floral foraging resources (Prýs-Jones et al. 2016). However, considering *B. lucorum* is more adaptable to change and a very efficient forager, the species can competitively exclude *B. jonellus* from shared environments (Kratochwil 2016).

*Bombus lucorum* is expanding its range to other North Atlantic islands such as the Faroe Islands (Jensen and Madsen 2013, 2018). The Faroe Islands (Figure 1) is an archipelago located in the North Atlantic Ocean 400 km southeast of Iceland, 300 km northwest of the United Kingdom and 600 km west of Norway. The Faroe Islands comprise 18 islands, with a population of around 53,000 people, of which 14,000 inhabit the capital city of Tórshavn (Supplementary material Table S1). Four sub-sea tunnels connect several of the islands, with bridges and ferries connecting the rest. The isolated nature of the Faroe Islands means many goods are imported, totalling almost 1.2 billion GBP between October 2023 and September 2024 (Statistics Faroe Islands 2024).

Despite this isolation, the Faroe Islands have experienced several new unintended bumblebee introductions in the past few decades. Madsen and Jensen (2011) first described the unintended introductions of *B. lucorum* and *Bombus pratorum* (Linnaeus, 1761) in 2007 and 2010, respectively. These species' introductions were further explored with respect to both their expanding and, in the case of *B. pratorum*, decreasing distributions (Jensen and Madsen 2013, 2018). Jensen and Madsen (2018) speculated that more bumblebee species were likely to be unintentionally introduced to the Faroese fauna based on the increase of maritime transport and inter-island infrastructure. Observations have since been made identifying the presence of three more species, *B. hortorum*, *B. hypnorum* and *B. terrestris* (Linnaeus, 1758).

This communication aims to update the distributions of *B. lucorum* and *B. pratorum*, explore the potential establishments of *B. hortorum*, *B. hypnorum* and *B. terrestris*, and propose what future work needs to be done to determine their invasive potential.

## Materials and methods

Observations of non-native bumblebees have been collated from 2007 to 2024 from several sources. The very first recorded bumblebee was caught in 1887 and is currently stored at the Zoological Museum in Copenhagen, Denmark (ZMUC). Many observations have been submitted and recorded after a call for more information on the Faroese radio and television by the Faroese natural historian Jens-Kjeld Jensen in 2010, 2011 and 2012. This successful engagement of the Faroese public has led to 124 photographic and videographic observations, and 102 descriptive submissions via social

media, telephone and email. Bumblebees have been actively searched for from 2010 onwards and the occasional individual caught for identification. Some specimens are stored at the ZMUC and others at the National Museum of the Faroe Islands. Additionally, data from iNaturalist (<https://www.inaturalist.org/>), a crowdsourced repository for species observation records, has been collated between 2019 and 2024. Only observations with permission of use were used in the final dataset (included = 49, excluded = 23). Each of the photos from these observations were reviewed manually to ensure species identification was correct based on the individual's phenotype. The abundance data of each species was deemed too unreliable, as observations were too sporadic. Therefore, each recorded observation has been grouped into the town or village it was seen and presented as presence data (Table S2).

## Results

### *Bombus hortorum*

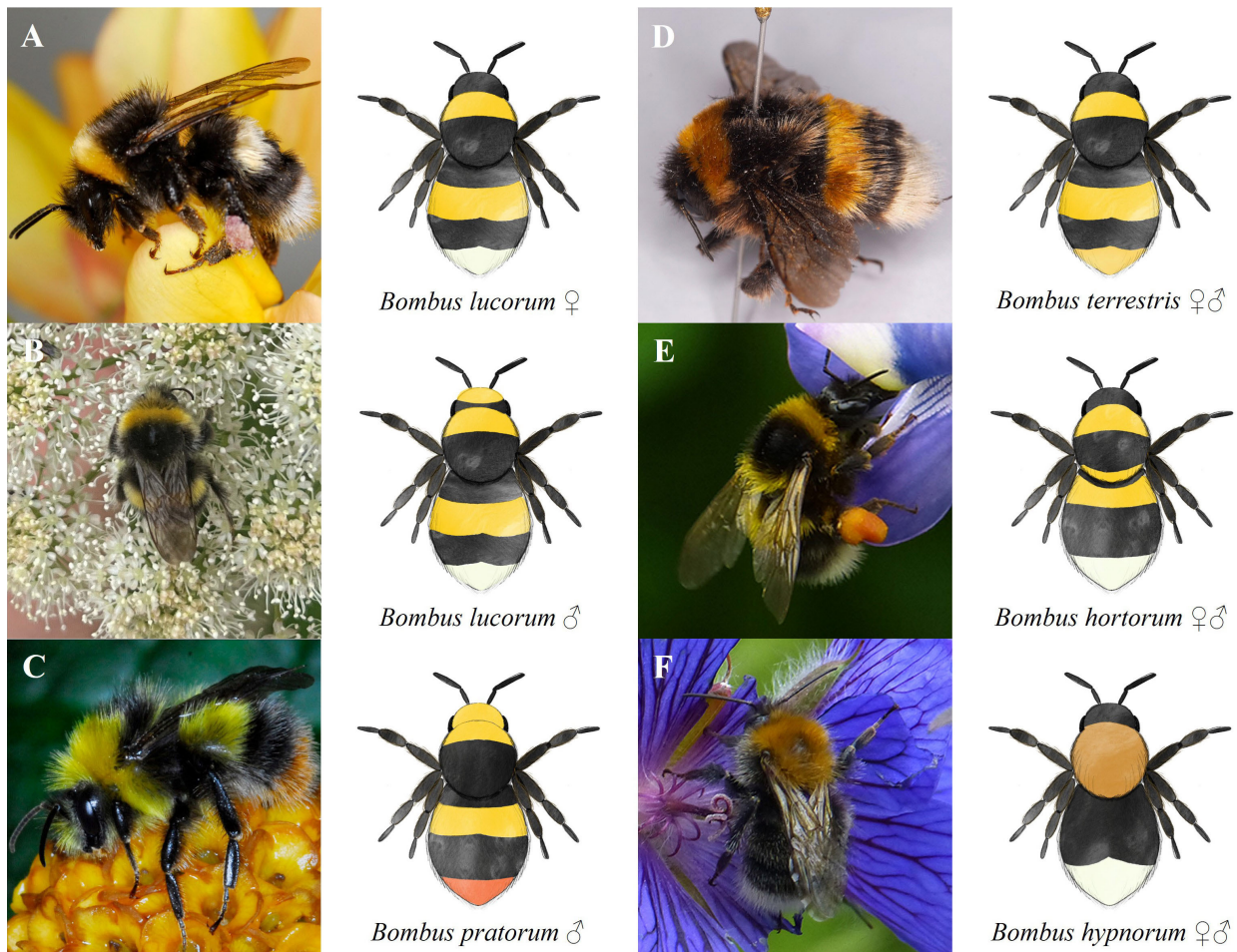
The first recorded *B. hortorum* was caught on 14 August 2021, on a boat docked in Tvøroyri, a village on the east coast of Suðuroy island. The boat had sailed from the main capital city Tórshavn, where the majority of bumblebee species observations are. In 2021 and 2022, *B. hortorum* was independently recorded 7 times in both Tórshavn and Hoyvík. Based on its widespread distribution within these towns, it is reasonable to assume that the species may have been present for some time prior to the initial recorded observation. The banding pattern on *B. hortorum* is not dissimilar to *B. lucorum* and *B. terrestris* (Figure 2), so misidentifications might be possible.

### *Bombus hypnorum*

Observations of *B. hypnorum* have been more localised, with the first observed individual found on 10 August 2021 in the capital city of Tórshavn. This individual was observed stationary on the road surface, displaying neither foraging behaviour nor flight activity. 12 more observations were recorded in both Tórshavn and neighbouring Hoyvík in 2021 and 2022. As of 2024, the species has not spread further than the Tórshavn municipality. Individuals observed in 2022 displayed forms of increased melanin and were significantly darker than a typical *B. hypnorum*.

### *Bombus lucorum/terrestris*

At least 83 observations of *B. lucorum* have been made since 2007 when the first queen was sighted in Skálbotnur on the island of Eysturoy. Whilst this first individual was caught and identified formally at the Copenhagen Zoological Museum, many of these observations were recorded using photographs from mobile phones and so it cannot be said for certain that they are not *B. terrestris*. Both *B. lucorum* and *B. terrestris* workers have very similar phenotypes, with the same yellow banding pattern at the top of



**Figure 2.** Banding patterns of the five introduced bumblebee species (*Bombus hortorum*, *Bombus hypnorum*, *Bombus lucorum*, *Bombus pratorum* and *Bombus terrestris*), including differences between Queens (♀), workers (♀) and males (♂). In *B. lucorum*, banding patterns are typically the same between Queens and workers. Banding patterns that are the same between Queens, workers and males are depicted as ♀♂. Note: illustrations are to depict banding pattern only. Photos: A, C & D by Jens-Kjeld Jensen, B by Shannon Goldberg, E & F by Marita Gulckett.

the thorax and midway down the abdomen (Figure 2). *Bombus lucorum* queens have a white tail, whereas *B. terrestris* queens present a buff, or a white colour, depending on their geographical origin. Male *B. lucorum* are easier to distinguish owing to the yellow hairs found on the face, which *B. terrestris* males do not have. To avoid the risk of incorrectly recording distributions, unless stated specifically as *B. lucorum* or *B. terrestris*, these two species have been grouped together (*B. luc/terr*) in this article.

Since the first recording of *B. lucorum* in 2007 in Skálabotnur on Eysturoy, the species has spread to most of the Faroe Islands. By 2017, *B. luc/terr* had spread to 8 of the 18 islands, including all the towns found near the first initial observation. By 2024, *B. luc/terr* spread to further islands, moving away from Skálabotnur, and has been observed on 10 of the 18 islands. Evidence of breeding *B. lucorum* was found in Húsar on the northeast island of Kalsoy in 2019 and in 2024 this was still the case (Eskild Hansen *pers. comm.*). In 2021, the first recorded *B. luc/terr* was observed in Mykines village on Mykines Island, the westernmost island of the Faroe Islands. On the island of Sandoy, between 2015 and 2019, *B. luc/terr* had been restricted

to the town of Skopun. In 2022, the species had spread on Sandoy and individuals of *B. luc/terr* were photographed in Sandur, a town south of Skopun. Presence of *B. lucorum* in Sandur was further confirmed by 3 individual specimens caught and identified by Henning Bang Madsen. *Bombus luc/terr* has also been photographed in Gjógv, the most northerly village of Eysturoy. This individual was photographed stationary on the grass, not displaying foraging or flight activity.

There has been 1 confirmed observation of a queen *B. terrestris* in 2017. This individual was caught in Tvøroyri on the island of Suðuroy and identified using DNA barcoding by Prof. Dr. Robert J. Paxton of Martin Luther University Halle-Wittenberg, Germany. Currently there is no evidence that *B. terrestris* is actively breeding here or anywhere else on the Faroe Islands and no evidence is available that it is involved in greenhouse pollination on the islands.

### ***Bombus pratorum***

The distribution of *B. pratorum* on the Faroe Islands has been extensively discussed (Madsen and Jensen 2011; Jensen and Madsen 2013, 2018). The first 2 initial observations of *B. pratorum* were in 2008 at Signabøur, a town situated on the east coast of Streymoy, the largest of the islands. More observations were recorded in 2011 and 2012 in the towns of Kollafjørður and Hósvík, both north of Signabøur. Since then, however, *B. pratorum* has not been observed in any of these towns. In 2016, 2017 and 2022, 3 confirmed individuals were observed in Vestmanna, west of the initial recorded sightings. In 2019, an individual *B. pratorum* was also observed in Kvívík, south of Vestmanna. No sightings were reported anywhere on the Faroe Islands in 2023 or 2024.

### **Discussion**

Most bumblebee observations have been recorded in or near towns and villages, where there are increasing amounts of non-native and imported flowers such as *Rosa rugosa*, *Fuchsia* sp., *Centaurea* sp. and *Lupinus* sp. Anecdotally, bumblebees have been introduced to the islands this way through means of shipment, as discussed in Jensen and Madsen (2018). It seems likely that certain bumblebee species are more likely to establish within urbanised areas because of these increases in foraging resources. Much of the rural Faroese landscape has been largely devoid of flowers typically considered appropriate foraging resources for bumblebees in the past, owing to sheep grazing and a cold, harsh climate. Sheep grazing is particularly extensive across the islands, with grasslands dominating the vegetation to accommodate this and scant amounts of flowers and trees as a result (Haraldsstovu 2020). Prior to the establishment of *B. pratorum* and *B. lucorum* in 2007, only one observation of a bumblebee had been made. In 1887, an individual *B. lapponicus* (Fabricius, 1793) was recorded, but the

species did not establish. Perhaps it was a one-off accidental introduction, or perhaps floral resources were so low the species could not survive.

A few of the larger settlements such as the capital Tórshavn also have parks with areas of woodland that provide possible nesting habitats for some species, such as the newly established *B. hypnorum* (Prÿs-Jones 2019). The nesting preferences of *B. hypnorum* are fairly unique among bumblebee species, preferring elevated and enclosed sites such as tree cavities, bird boxes, and other above-ground locations (Prÿs-Jones 2019). Notably, the landscape of the Faroe Islands is largely devoid of trees, with limited wooded areas primarily restricted to urban parks scattered across the islands. In Tórshavn, however, the relatively high density of introduced tree species, planted within gardens, parks, and cemeteries, creates multiple suitable nesting opportunities for *B. hypnorum*, potentially supporting its establishment and survival in this environment. In 2024, an individual *B. hypnorum* nest was discovered in the attic of a house in Tórshavn (Konni Olsen *pers. comm.*), highlighting the opportunities presented in an urban context. This would limit the species' success to urban and sub-urban areas, which may restrict range increases in the future and prevent this species from being a widespread invasive.

*Bombus hortorum* is another new species to the Faroe Islands and is partly reliant on introduced garden plants as a main source of foraging (Prÿs-Jones et al. 2016). The proboscis length of *B. hortorum* is longer than many shorter-tongued, generalist bumblebee species such as *B. lucorum*. As a result of this long tongue, *B. hortorum* often favours deeper, more tubular garden plants (Goulson 2010) such as the *Weigela* sp. found in many gardens in Tórshavn. In Iceland, *B. hortorum* has failed to spread outside of Reykjavik and neighbouring towns because of this (Kratochwil 2016). In the Faroe Islands, currently *B. hortorum* seems restricted to Tórshavn and neighbouring Hoyvík possibly for similar reasons, only being observed in Tvøroyri because of human-facilitated maritime transport. Flowering species found between towns are mostly those with shallow corollas, such as *Succisa pratensis*, *Prunella vulgaris* and *Calluna vulgaris*. While theoretically *B. hortorum* could forage on these flowers, Goulson (2010) speculated that the long tongue was a hinderance in shallow flowers and resulted in inefficient foraging. It is possible that because of this, *B. hortorum*'s distribution will remain localised to areas of urban and sub-urban planting. In Northern Norway, however, *B. hortorum* has recently colonised the Varanger region, foraging on shallower *Astragalus alpinus* flowers (Hallmen 2024a, b). This means the species has the potential to forage on the shallower flowers outside of the towns and villages on the Faroe Islands and increase its range in future years.

It is evident from these observations that *B. luc/terr* are now well established on the Faroe Islands. In the span of 17 years (2007–2024), *B. luc/terr* have been observed on 10 of the 18 islands and their distribution



**Figure 3.** The distribution of the five introduced bumblebee species (*Bombus hortorum*, *Bombus hypnorum*, *Bombus luc/terr* and *Bombus pratorum*) between 2007 and 2024 on the Faroe Islands. Towns and villages georeferenced in Supplementary material Table S1.

is continually expanding. Every observation has been made in or near a town (Figure 3), implying that floral resources in the rural landscapes of the Faroe Islands are unfavourable to supporting these bumblebees. It is also evident that *B. luc/terr* have been the most successful bumblebee species so far. These species are generally more resilient than the other bumblebee species described here. A variety of factors contribute to this resilience, including the species' broad nesting preferences, adaptability to urban habitats and more extensive foraging palate (Maebe et al. 2021; Falk and Lewington 2019). Many of the observations have been recorded initially as *B. lucorum*, but considering the species' phenological similarities to

*B. terrestris*, it will be important to distinguish which of the two species is present in which locations using DNA analysis in the future (Alferink et al. 2020).

Since 2007, the range of *B. pratorum* has decreased. Initially the species was present in at least three towns, but as of 2016 individuals have only been observed a few times in Vestmanna and only once in Kvívík. The Faroese climate can be harsh, with average temperatures ranging from 3–10 degrees Celsius across the year. Whilst *B. pratorum* has adaptations to tolerating a cooler climate (Goulson 2010), the floral season is greatly reduced, and foraging opportunities are lower in the smaller villages such as Vestmanna. *Bombus pratorum* has a reduced flight season compared with other species; it forages mainly in spring and early summer. This may well reduce the chances of this species to successfully colonise the Faroe Islands. Travelling between villages offers an even greater challenge considering the very limited availability of floral resources in the landscape. The absence of sufficient foraging resources promotes low habitat connectivity, meaning *B. pratorum* would struggle to maintain viable populations across these fragmented habitats.

### Concluding remarks

This communication reports observations of *B. hypnorum*, *B. hortorum* and *B. terrestris* for the first time on the Faroe Islands. The establishment of both *B. pratorum* and *B. lucorum* have been recorded previously (e.g. Jensen and Madsen 2013, 2018; Madsen and Jensen 2011), but only *B. luc/terr* seems to have continued to prosper. The unintentional introduction of species such as *B. lucorum* raises questions of not just how, but where did the species originate from before the Faroe Islands. Further DNA work can be done to determine whether the genetic makeup of these *B. lucorum* are similar to those found in Iceland the United Kingdom, or mainland Europe, thus starting to build a picture of how the species expands its range over large bodies of water. DNA sequencing should also be used to distinguish between *B. lucorum* and *B. terrestris* throughout the islands to determine their respective distribution ranges.

Most observations have been localised to urban and sub-urban areas so far, indicating that establishment zones are limited, and floral assemblages of rural areas do not currently provide sufficient foraging for bumblebees. Climate warming, however, is driving change in plant communities globally by altering floral species distributions and phenology and so bumblebees may have the potential to increase their range in the future (Trunschke et al. 2024). With increased maritime transport as well, the bumblebee fauna of the Faroe Islands will need careful monitoring as time progresses. To determine the invasive potential of these species, it is paramount that plant-pollinator network data is produced for the Faroe Islands.

## Author's contribution

All authors contributed to the design and development of the manuscript. SG and J-KJ collected the data. SG analysed the data and led the writing with all authors contributing.

## Author's ORCIDs

Shannon Goldberg: [0009-0007-0257-0399](https://orcid.org/0009-0007-0257-0399); Rinke Vinkenoog: [0000-0003-4944-6575](https://orcid.org/0000-0003-4944-6575); Matthew J Pound: [0000-0001-8029-9548](https://orcid.org/0000-0001-8029-9548); Jens-Kjeld Jensen: [0000-0001-7268-6046](https://orcid.org/0000-0001-7268-6046).

## Acknowledgements

SG thanks Natural Environment Research Council for PhD funding through the OnePlanet doctoral training programme (NE/S007512/1). Special thanks to Marita Gulkleit and Dánial Jespersen for their help with collecting material. Information, videos and photos from all over the Faroe Islands were gratefully obtained from many local people. Thanks to Henning Bang Madsen, Zoological Museum in Copenhagen, for help with the first species determinations and to Prof. Dr. Robert J. Paxton of Martin Luther University in Halle-Wittenberg, Germany for DNA barcoding. With thanks also to the anonymous reviewers and the managing editor for their suggestions and comments on the manuscript.

## Funding declaration

The PhD of SG is funded through NE/S007512/1.

## Ethics and permits

Ethical approval was obtained prior to the submission of this article from Northumbria University, Newcastle upon Tyne, UK. Ethics number: 6158. All research pertaining to this article did not require any research permit(s).

## Data availability

Data supporting this study are in the supplementary information and openly available from Zenodo at [10.5281/zenodo.17038062](https://doi.org/10.5281/zenodo.17038062).

## References

- Alferink L, Marshall L, De Jonghe R, Biesmeijer J (2020) Distinguishing white-tailed bumblebees in the Netherlands: morphology, ecology and DNA-barcoding. *Authorea*, <https://doi.org/10.22541/au.159969685.50828819>
- Falk S, Lewington R (2019) Field guide to the bees of Great Britain and Ireland. Bloomsbury Publishing, London, UK, 432 pp
- Fijen TPM (2020) Mass-migrating bumblebees: An overlooked phenomenon with potential far-reaching implications for bumblebee conservation. *Journal of Applied Ecology* 58: 274–280, <https://doi.org/10.1111/1365-2664.13768>
- Goulson D (2010) Bumblebees: behaviour, ecology and conservation, 2<sup>nd</sup> edn. Oxford University Press, Oxford, UK, 317 pp, <https://doi.org/10.1093/oso/9780199553068.001.0001>
- Goulson D, Williams PH (2001) *Bombus hypnorum* (Hymenoptera: Apidae), a new British bumblebee? *British Journal of Entomology & Natural History* 14(3): 129–131
- Goulson D, Kaden JC, Lepais O, Lye GC, Darvill B (2011) Population structure, dispersal and colonization history of the garden bumblebee *Bombus hortorum* in the Western Isles of Scotland. *Conservation Genetics* 12: 867–879, <https://doi.org/10.1007/s10592-011-0190-4>
- Hallmen M (2017) Changes in the bumblebee fauna of Iceland: Will *Bombus lucorum* replace *Bombus jonellus*? (Hymenoptera: Apoidea). *Nachrichten des Entomologischen Vereins Apollo* 38(2/3): 121–128
- Hallmen M (2024a) Comparative studies on the bumblebee (Hymenoptera, Apidae, *Bombus* Latreille, 1802) fauna of the small Ekkerøy peninsula in the subarctic part of northern Norway from 1990 and 2023. *Norwegian Journal of Entomology* 71: 188–200
- Hallmen M (2024b) On top of Europe - the Small Garden Bumblebee *Bombus hortorum* has reached the coast of the Arctic Ocean in Northern Norway. *Mitteilungen des Internationalen Entomologischen Vereins* 46(1/2): 1–5
- Haraldsstovu Kí (2020) The effects of grazing and climate warming on plant species in the Faroe Islands. Master's Thesis, Swedish University of Agricultural Sciences, Sweden, 45 pp

- Jensen CD (2023) Weather observations from Tórshavn, the Faroe Islands 1953-2022. DMI Technical Report 23-09. Danish Meteorological Institute, Copenhagen, 9 pp, <https://www.dmi.dk/fileadmin/Rapporter/2023/DMIRep23-09.pdf>
- Jensen J-K, Madsen HB (2013) To arter af humlebier yngler på Færøerne (Hymenoptera, Apidae). *Entomologiske Meddelelser* 81: 1–14, [http://www.jenskjeld.info/artikler/Humlebier\\_Jensen-Madsen\\_2013.pdf](http://www.jenskjeld.info/artikler/Humlebier_Jensen-Madsen_2013.pdf)
- Jensen J-K, Madsen HB (2018) Opdatering af humlebiernes udbredelse på Færøerne (Hymenoptera, Apoidea, Apiformes). *Entomologiske Meddelelser* 86: 51–56, [http://www.jenskjeld.info/artikler/An\\_update\\_on\\_bumblebee\\_distribution\\_in\\_the\\_Faroe\\_Islands\\_2018.pdf](http://www.jenskjeld.info/artikler/An_update_on_bumblebee_distribution_in_the_Faroe_Islands_2018.pdf)
- Kratochwil A (2016) Review of the Icelandic bee fauna (Hymenoptera: Apoidea: Anthophila). *Stuttgarter Beiträge zur Naturkunde A* 9: 217–227, <https://doi.org/10.18476/sbna.v9.a14>
- Madsen HB, Jensen J-K (2011) Humlebier på Færøerne (Hymenoptera, Apidae). *Entomologiske Meddelelser* 79: 19–26, [http://www.jenskjeld.info/artikler/Madsen\\_Jensen2011.pdf](http://www.jenskjeld.info/artikler/Madsen_Jensen2011.pdf)
- Maebe K, Hart AF, Marshall L, Vandamme P, Vereecken NJ, Michez D, Smagghe G (2021) Bumblebee resilience to climate change, through plastic and adaptive responses. *Global Change Biology* 27: 4223–4237, <https://doi.org/10.1111/gcb.15751>
- Namin SA, Park T-Y, Jung C, Meyer-Rochow VB (2021) Molecular characteristics of *Bombus (Alpinobombus) polaris* from North Greenland with comments on its general biology and phylogeography. *Polar Biology* 44: 2209–2216, <https://doi.org/10.1007/s00300-021-02952-y>
- Potapov GS, Kondakov AV, Kolosova YS, Tomilova AA, Filippov BY, Gofarov MY, Bolotov IN (2018) Widespread continental mtDNA lineages prevail in the bumblebee fauna of Iceland. *ZooKeys* 775: 141–153, <https://doi.org/10.3897/zookeys.774.26466>
- Prÿs-Jones O (2019) Preadaptation to the vertical: an extra dimension to the natural history and nesting habits of the Tree Bumble Bee, *Bombus (Pyrobombus) hypnorum*. *Journal of Apicultural Research* 58: 643–659, <https://doi.org/10.1080/00218839.2019.1634462>
- Prÿs-Jones O, Kristján K, Ólafsson E (2016) Hitchhiking with the Vikings? The anthropogenic bumblebee fauna of Iceland - past and present. *Journal of Natural History* 50: 45–46, <https://doi.org/10.1080/00222933.2016.1234655>
- Seebens H, Bacher S, Blackburn TM, Capinha C, Dawson W, Dullinger S, Genovesi P, Hulme PE, van Kleunen M, Kühn I, Jeschke JM, Lenzner B, Liebhold AM, Pattison Z, Pergl J, Pyšek P, Winter M, Essl F (2020) Projecting the continental accumulation of alien species through to 2050. *Global Change Biology* 27: 970–982, <https://doi.org/10.1111/gcb.15333>
- Trunschke J, Junker RR, Kudo G, Alexander JM, Richman SK, Till-Bottraud I (2024) Effects of climate change on plant-pollinator interactions and its multitrophic consequences. *Alpine Botany* 134: 115–121, <https://doi.org/10.1007/s00035-024-00316-w>

## Web sites, online databases and software

- Statistics Faroe Islands (2024) Imports down DKK 833 million. Tórshavn: Hagstova Føroya. <https://hagstova.fo/en/news/imports-down-dkk-15-billion> (accessed 14 November 2024)